

## **Association between Sleep Quality and Impaired Glucose Metabolism: The Qazvin Metabolic Diseases Study (QMDS)**

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### **Introduction**

It is known that sleep has a major role in the regulation of endocrine functions and glucose metabolism. Disturbances of different aspects of sleep, including sleep duration, quality, respiratory function during sleep and circadian timing have all been linked to abnormal glucose



metabolism, However it is not clear whether the sleep quality is affected at or prior to the onset of diabetes, among those with impaired glucose metabolism. The purpose of this study was to determine the association of sleep quality and impaired glucose metabolism in Qazvin, Iran.

## Methods

This cross-sectional study was conducted in 982 people (aged 20–78 years old) between September 2010 and April 2011 in Qazvin, Iran. Sleep quality and oral glucose tolerance test were performed for each participant who had never been diagnosed with diabetes. Participants were characterized as having normal glucose metabolism, pre-diabetes or diabetes according to American Diabetes Association criteria. A logistic regression analysis was used to examine the association of sleep quality and impaired glucose metabolism.

## Results

Total global PSQI score was  $8.27 \pm 2.7$  in subjects with normal glucose metabolism and  $8.35 \pm 2.5$  in subjects with pre-diabetes. The results showed that poor sleep quality was associated with 2.24 fold increased risk of pre-diabetes after adjustment for age, gender, body mass index, systolic blood pressure and triglycerides.

## Conclusions

This study provides evidences that subjects with poor sleep quality are more likely to develop impaired glucose metabolism than people with well sleep quality. Implementation of sleep hygiene principles and regulation of sleep/work pattern can reduce the risk of impaired glucose metabolism in susceptible population